

AMENDMENTS TO THE CLAIMS

Please cancel claims 1-9, 11 and 18 without prejudice or disclaimer; amend claims 10, 12-17, 19-20; and add new claims 22-27 as follows:

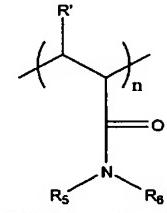
1-9 (Cancelled)

10. (Currently Amended) A method for forming a photoresist pattern, comprising the steps of:

- (a) coating a chemically amplified photoresist composition on a semiconductor substrate and baking the substrate to form a photoresist film;
- (b) exposing the photoresist film to light;
- (c) baking the photoresist film;
- (d) developing the photoresist film to form a photoresist pattern;
- (e) forming a photoresist pattern by a lithography process;
- (f) coating the an overcoating composition of claim 1 on the whole surface entire of the photoresist pattern to form an overcoating layer;
- (g) baking the overcoating layer; and
- (h) developing the overcoating layer with an alkaline developing solution; wherein the overcoating composition comprises:

(i) a water-soluble polymer being one of a compound of Formula 1 or polyvinylpyrrolidone:

Formula 1



wherein R' is H or CH₃; R₅ and R₆ individually are H or a C₁-C₃ alkyl group; and n is an integer from 50 to 150;

- (ii) an acidic compound; and
- (iii) water.

11. (Cancelled)

12. (Currently Amended) The method according to claim 10, wherein a height of the photoresist pattern obtained from step (ad) ranges from 2000 to 3000 Å.

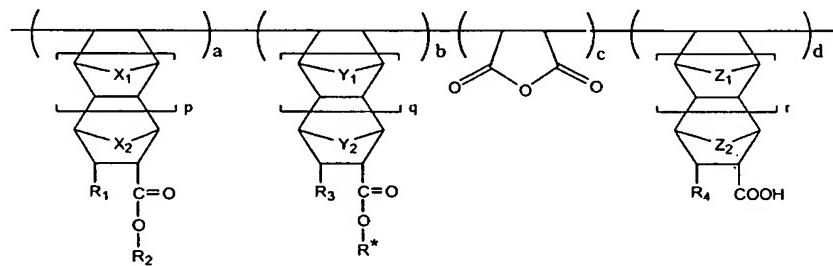
13. (Currently Amended) The method according to claim 10, wherein a thickness of the overcoating layer in step (be) ranges from 200 to 5000 Å from the top surface of the photoresist pattern of the step (ad).

14. (Currently Amended) The method according to claim 10, wherein the bake process of step (ef) is performed at a temperature ranging from 50 to 150°C for 30 to 90 seconds.

15. (Currently Amended) The method according to claim 10, wherein the alkaline developing solution of step (dg) is TMAH, KOH or NaOH aqueous solution.

16. (Currently Amended) The method according to claim 10, wherein the chemically amplified photoresist composition comprises a photoresist polymer having a repeating unit of Formula 2:

Formula 2



wherein X₁, X₂, Y₁, Y₂, Z₁ and Z₂ individually are CH₂ or CH₂CH₂; R₁, R₃ and R₄ individually are selected from the group consisting of H, substituted C₁-C₁₀ alkyl and unsubstituted C₁-C₁₀ alkyl;

R₂ is C₁-C₁₀ hydroxyalkyl;

R* is an acid labile protecting group;

p, q and r individually are an integer ranging from 0 to 2; and

the relative ratio of a : b : c : d is in the range 5~90 mol% : 5~90 mol% : 0~90 mol% : 0~90 mol%.

17. (Currently Amended) The method according to claim ~~11~~ 16, wherein the photoresist polymer is a hybrid-type copolymer further comprising a ~~first polymer having a repeating unit of cyclo-olefin backbone and a second~~ polymer having a repeating acrylate unit of acrylate backbone.

18. (Cancelled)

19. (Currently Amended) The method according to claim 17, wherein the second polymer comprising the acrylate repeating unit of said second polymer is poly{4-[2-(4-hydroxyphenyl)-1,1,1,3,3,3-hexafluoropropyl]phenyl methacrylate/(1,1,1,3,3,3-hexafluoro-2-tert-butyl carboxylate)isopropyl methacrylate}, poly[N-perfluoropropyl maleimide/t-butyl-5-norbornene-2-carboxylate/2-(perfluoro-octyl)ethyl methacrylate] or poly(maleic anhydride/hexafluorobutyl-5-norbornene-2-carboxylate/2,6-difluoromethylbenzylacrylate) .

20. (Currently Amended) The method according to claim ~~11~~ 10, wherein the exposure light source of step (a-2 b) is selected from the group consisting of ArF (193 nm), KrF (248 nm), F2 (157 nm) and EUV (13 nm).

21. (Currently Amended) The method according to claim ~~11~~ 10, wherein the exposure energy of step (a-2 b) ranges from 10 to 30 mJ/cm².

22. (New) The method according to claim 10, wherein molecular weights of compound of the Formula 1 ranges from 5000 to 15000.

23. (New) The method according to claim 10, wherein the water soluble polymer represented by Formula 1 is poly (N, N-dimethylacrylamide).

24. (New) The method according to claim 10, wherein (ii) the acidic compound is an organic sulfonic acid.

25. (New) The method according to claim 24, wherein the organic sulfonic acid is a p-toluenesulfonic acid monohydrate.

26. (New) The method according to claim 10, wherein (ii) the acidic compound is present in an amount ranging from 2 to 20 wt% based on the water-soluble polymer.

27. (New) The method according to claim 10, wherein (iii) the water is present in an amount ranging from 500 to 4000 wt% based on the water-soluble polymer.